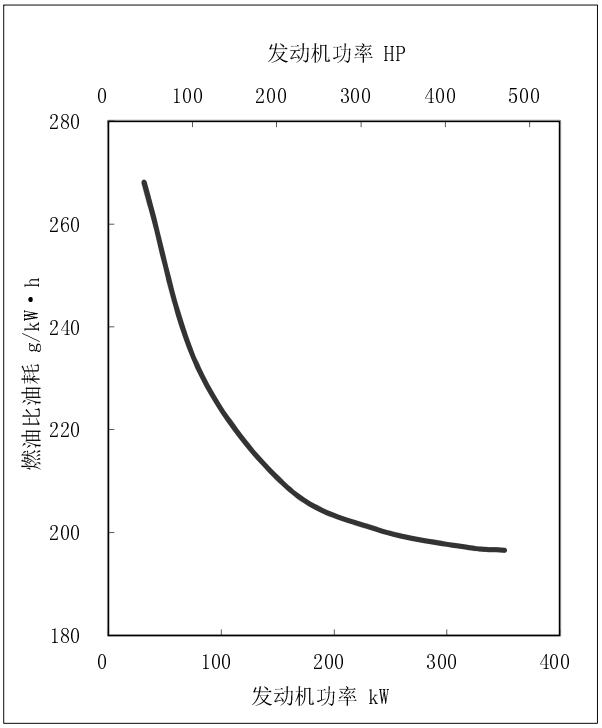
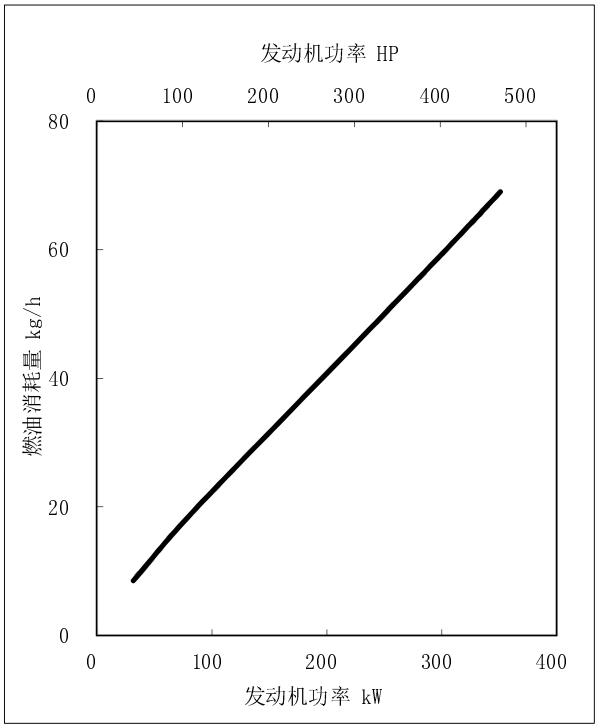
康明斯发动机有限公司 发动机性能曲线	发动机型号 NTA855-G4		曲线编号 C-0810A	日期 2006-9-22
	CPL代号 3527	数据单号 C-0810A	排放水平	

排量：	14L	[855 in.^{3}]	缸数：	6	燃油系统：	PT
缸径：	140mm	[5.50 in.]	转速：	1500 r/min	特征编号：	D093613DX02
冲程：	152mm	[6.00in.]	吸气方式：	增压，中冷		

备用功率		常用功率		持续功率	
kW	HP	kW	HP	kW	HP
351	470	317	425		





工况	功率		燃油消耗量		燃油消耗率
	HP	kW	kg/h	L/h	g/kW-h
备用100%	470	351	69.0	83.1	196.6
常用100%	425	317	62.5	75.3	197.2
75%	319	238	47.7	57.5	200.6
50%	213	159	33.1	39.9	208.8
25%	106	79	18.4	22.2	232.2
10%	43	32	8.5	10.2	268.1

所有数据基于：

--发动机带燃油系统、水泵、机油泵、空滤器和消声器运转时获得的；但不包括交流发电机、空压机、风扇、 选用设备和被驱动的部件。

--发动机运转使用符合符合ASTM D975标准的2#柴油。

--ISO 3046，第1部分，标准参考条件 :大气压力100kPa(29.5in.Hg)、进气温度 25°C (77°F) 、 相对湿度30% 。

数据发放状态：

数据公差：+/-5%

批准：

G 驱发动机功率标定指导说明

此指导说明是为了确保发电驱动用发动机在装配发电机组时的正确应用。发电驱动用发动机不能用于变速直流发电机组。

备用功率标定

可用于在失去主电源的情况下提供紧急备用电源。在此功率上没有超载能力。在任何情况下发动机都不允许以备用功率与市电并网。

此标定只适用于有可靠市电之处。采用备用功率标定的发动机平均负载不超过 80%备用工况效率，且每年运行时间不超过 200 小时。这包括每年在备用功率下运行时间低于 25 小时。除了确实失去市电的情况外，不应使用备用标定。与供电方发生的协议停电不被认为是紧急情况。

持续功率标定

用于每年不限时的按100%负荷恒定运行的供应公用电力的场合。本功率不能获得超负荷运行能力。

常用功率标定

可用于向商业用电场合提供电能。常用功率应用必须采用于以下两种情形之一：

不限时运行常用功率

常用功率可每年不限时地进行变负载的应用。每个 250 小时运行时间内，可变负载平均值不超过 70%常用功率。

每年 100%常用功率下的运行时间不超过 500 小时。

每 12 小时允许 1 小时超负荷 10%运行。每年总的超负荷 10%运行时间不超过 25 小时。

有限时间运行常用功率

常用功率可在有限时间内用于不变负载应用。适用于协议停电的地区，如电力短缺。发动机每年可以以不超过常用功率并网发电750小时。但是用户应该明白，任何发动机会因为这样高的连续负载而寿命减少。任何超过每年750小时的运行，不应按常用功率运行而应该以持续功率运行。

参考标准：

BS-5514 及 DIN-6271，基于 ISO-3046。

温度、海拔高度修正：

发动机可在以下条件运行：

1800RPM 在 5000 英尺以下(1525m)、104℉(40℃)以下不需进行修正。

1500RPM 在 5000 英尺以下(1525m)、104℉(40℃)以下不需进行修正。

超过这些条件，按高度每上升 1000 英尺(300m)功率减少 4%、温度每上升 10℉降低 1%(每上升 11℃下降 2%)计算。

康明斯发动机有限公司

数据单

发动机型号: NTA855-G4 | **数据单编号: C-0810A**
特征编号: D093613DX02 | **性能曲线编号: C-0810A**
CPL 号: 3527 | **参考外形图号: 4915137**
常用功率: 317 kW (425 HP) at 1500 r/min | **日期: 2006/9/22**
备用功率: 351 kW (470 HP) at 1500 r/min | **排放水平:**

整机数据

型式	四冲程、直列、六缸	
进气方式	增压，中冷	
缸径×冲程 - mm×mm (in.×in.)	140×152	(5.5 × 6.0)
排量 - L (in.^{3})	14	(855)
压缩比	14.0:1	
发火顺序	1-5-3-6-2-4	
发动机干重		
--风冷型发动机 - kg (lb.)	1300	(2870)
--水冷型发动机 - kg (lb.)	1410	(3095)
发动机湿重		
--风冷型发动机 - kg (lb.)	1350	(2970)
--水冷型发动机 - kg (lb.)	1510	(3320)
旋转部件转动惯量 - 配备FW1109飞轮 - kg·m^2 (lb.·ft.^{2})	4.99	(118.5)
发动机重心距飞轮壳后端 - mm (in.)	704	(27.7)
发动机重心在曲轴中心线之上 - mm (in.)	140	(5.5)

发动机安装

允许的最大缸体后端面处弯矩 - N·m (lb.·ft.)	1356	(1000)

排气系统

允许的最大排气背压 - kPa (in.Hg)	10	(3.0)
允许的标准排气管直径 - mm (in.)	127	(5.0)

进气系统

允许的最大进气阻力		
--新滤芯 - kPa (in. H_2O)	3.7	(15)
--旧滤芯 - kPa (in. H_2O)	6.2	(25)
允许的最小容纳灰尘能力 - g/L/s(g/CFM)	53	(25)
允许的最大进气温升ΔT - °C (°F)	17	(30)

冷却系统

冷却液容量 - 单机 - L (U.S. gal)	20.8	(5.5)
- 带散热器 - L (U.S. gal)	60.6	(16.0)
- 带热交换器 - L (U.S. gal)	49.2	(13)
发动机外部最大允许冷却液阻力 - kPa (PSI)	41	(6)
最大冷却水压力(除压力盖) kPa (PSI)	276	(40)
最大冷却水静压(高于曲轴中心线以上) -m (ft.)	14.0	(46)
标准节温器温度调节范围 - °C (°F)	82 - 94	(180 - 202)
允许的最小压力盖压力 -kPa (PSI)	48.2	(7.0)
冷却水最高温度 - °C (°F)	96	(205)
散热器上水室允许的最高温度 - °C (°F)	100	(212)
散热器上水室允许的最低温度 - °C (°F)	71	(160)
可允许的顶部水箱最高温度 - 备用功率 / 额定功率 - °C (°F)	104 / 100	(220 / 212)
推荐的顶部水箱最低温度 - °C (°F)	71	(160)
冷却水最小膨胀空间占系统容积 - %	5	
最小补水量 - L (U.S. gal)	4.2	(1.1)
发动机进水口处生水*的最高压力 -kPa (PSI)	103	(15)
生水泵进水口最大阻力 - kPa (in.Hg)	34	(10)

生水泵最大吸程 - m (ft.).....	10	(3.05)
最小生水泵管径 - mm (in.).....	51	(2)
允许的舷外冷却压损 -kPa (PSI).....	28	(4)

润滑系统

机油压力 @ 怠速 - kPa (PSI).....	103 最小	(15) 最小
@ 额定转速 - kPa (PSI).....	241 - 345	(35 - 50)
允许的最高机油温度 - °C (°F).....	121	(250)
机油盘容量 低位/高位 - L (U.S. gal.).....	28.4 / 36.0	(7.5 / 9.5)
系统总容量 - L (U.S. gal.).....	38.6	(10.2)
机油盘允许倾角 - 前倾/后倾/侧倾.....	38°/38°/38°	

燃油系统

喷油系统型式.....	直喷式康明斯 PT系统	
PT燃油泵进油管路最大允许阻力		
-- 新燃油滤清器 - kPa (in.Hg).....	13.5	(4.0)
-- 旧燃油滤清器 - kPa (in.Hg).....	27.1	(8.0)
回油管路最大阻力		
-- 带单向阀 - kPa (in.Hg).....	22.0	(6.5)
-- 不带单向阀 - kPa (in.Hg).....	8.5	(2.5)
最小燃油供油管直径 - mm (in.).....	16	(0.625)
最小燃油回油管直径 - mm (in.).....	13	(0.5)
燃油泵最大供油量 - L/h (U.S.gal/h).....	329	(87)
燃油压力 - kPa (PSI).....	1254	(182)
最大允许进油温度 °C (°F).....	71	(160)

电气系统

最小建议蓄电池容量 (24V)		
-- 仅发动机(不带负荷) - 冷起动电流 - CCA.....	900	
- 储备容量 - 最小.....	320	
-- 发动机带负荷 - 冷起动电流 - CCA.....	900	
- 储备容量 - 最小.....	320	
起动回路允许最大电阻 - ohm.....	0.002	
标准起动机(重型、正极啮合） -伏(volt).....	24	
标准蓄电池充电系统，负极接地 -安培(ampere).....	35	

性能数据

发动机怠速 - r/min	575 - 650	
发动机最高空车转速 - r/min	1800	
最大超速能力 - r/min	2700	
无辅助装置冷起动要求的最低曲轴转速 - r/min.....	150	
无辅助装置冷起动要求的最小扭矩 - N·m (lb.·ft.).....	509	(375)
估计在备用工况距离1m距离的声功率噪音(不包括排气噪音) -1500r/min -dBA.	不适用	

所有数据基于：

--发动机带燃油系统、水泵、机油泵、空滤器和消声器运转时获得的；但不包括交流发电机、空压机、风扇、 选用设备和被驱动的部件。

--发动机运转使用符合**ASTM D975**标准的2#柴油。

--**ISO 3046**，第1部分，标准参考条件 :大气压力100kPa(29.5in.Hg)、进气 温度 25°C (77°F)、 相对湿度30% 。

-- * 生水(Raw Water)：即发动机外循环水，使用海水时即为海水。

--本数据单包括风冷(散热器/风扇)和水冷(热交换器/海水泵)两种机型数据。

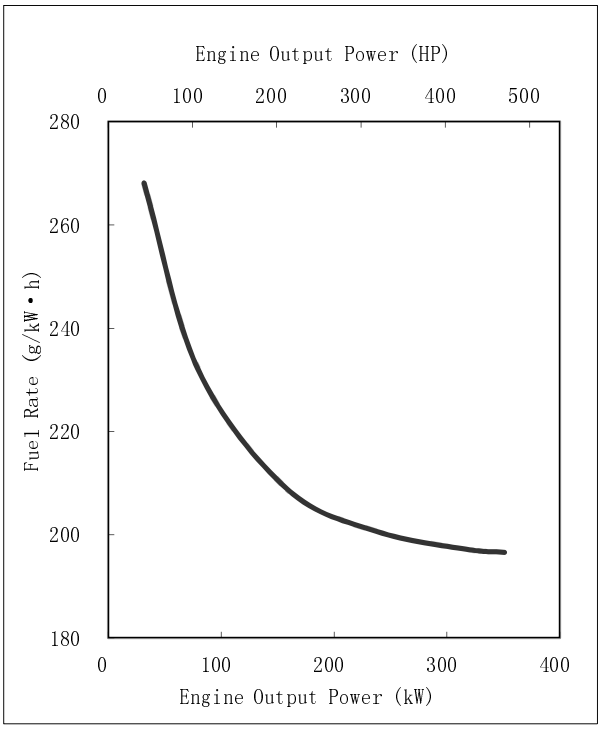
	额定功率		备用功率	
	50Hz		50Hz	
发动机转速 - r/min	1500		1500	
总输出功率 - kW (HP)	317	(425)	351	(470)
扭矩 N·m (lb.·ft.)	2018	(1488)	2235	(1648)
平均有效压力 - kPa (PSI)	1811	(262)	2006	(291)
活塞速度 - m/s (ft./min)	7.62	(1500)	7.62	(1500)
机械损失功率 - kW (HP)	22	(30)	22	(30)
进气流量 - L/s (CFM)	408	(865)	434	(920)
冷却水流量 - L/min.(GPM)	5.0	(79)	5.0	(79)
生水流量 - L/s (GPM)	3.4	(54)	3.4	(54)
燃油消耗量 - L/h (U.S.gal/h)	75	(19.9)	83	(22)
机油流量 - L/s (GPM)	2.2	(35)	2.2	(35)
排气温度(涡轮后) - °C (°F)	524	(975)	541	(1005)
排气流量(涡轮后) - L/s (CFM)	1128	(2390)	1225	(2595)
空燃比	25.8 : 1		24.8 : 1	
辐射散热量 - kW (BTU)	40	(2260)	44	(2500)
冷却水散热量 - kW (BTU)	238	(13530)	263	(14980)
排气散热量 - kW (BTU)	198	(11280)	219	(12490)

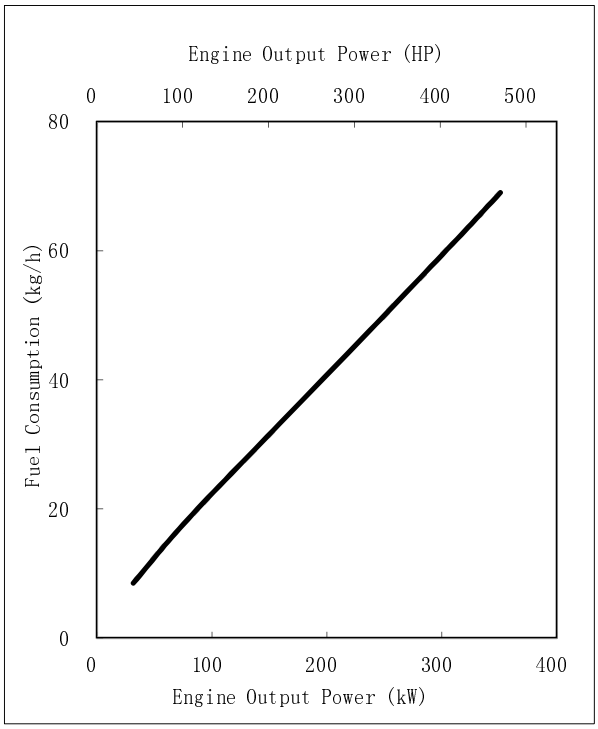
发动机型号: NTA855-G4
数据单号: C-0810A
日期: 2006/9/22

	CCEC CUMMINS ENGINE PERFORMANCE CURVE	Engine Model NTA855-G4		Curve No. C-0810A	Date 2006-9-22
		CPL Code 3527	Data Sheet C-0810A	Emission Level	

Displacement:	**14L**	**[855 in.^{3}]**	Cylinders: **6**	Fuel System:	**PT**
Bore:	**140mm**	**[5.50 in.]**	Speed: **1500 r/min**	Cfg. Number:	**D093613DX02**
Stroke:	**152mm**	**[6.00in.]**	Aspiration:	**Turbocharged & Aftercooled**	

Standby Power		Prime Power		Continuous Power	
kW	HP	kW	HP	kW	HP
351	470	317	425		





	Output Power		Fuel Consumption		Fuel Rate
	HP	kW	kg/h	L/h	g/kW-h
Standby100%	470	351	69.0	83.1	196.6
Prime100%	425	317	62.5	75.3	197.2
75%	319	238	47.7	57.5	200.6
50%	213	159	33.1	39.9	208.8
25%	106	79	18.4	22.2	232.2
10%	43	32	8.5	10.2	268.1

All data is based on :

--Engine Operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer, fan, and optional driven components.

--Engine operating with fuel corresponding to grade No.2-D per ASTM D975.

--ISO 3046, Part1, Standard Reference Conditions of : Barometric Pressure:100kPa(29.5in.Hg); Air Temperature: 25°C (77°F) ; Relative Humidity: 30% .

STAUS FOR CURVES AND DATA:

TOLERANCE: +/-5%

CHIEF ENGINEER:

POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating.

This rating should be applied where reliable utility power is available. A standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

CONTINUOUS POWER RATING is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

PRIME POWER RATING is applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours.

The total operating time at 100% Prime Power shall not exceed 500 hours per year.

A 10% overload capability is available for a period of 1 hour within a 12 hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Temperature And Altitude:

The engine may be operated at:

1800 RPM up to 5000 ft. (1525 m) and 104 °F (40 °C) without power deration.

1500 RPM up to 5000 ft. (1525 m) and 104 °F (40 °C) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000 ft. (300 m), and 1% per 10 °F (2% per 11 °C).

CCEC CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

MODEL:	**NTA855-G4**	**DATA SHEET:**	**C-0810A**
NFIGURATION NO.:	**D093613DX02**	**PERFORMANCE CURVE:**	**C-0810A**
CPL NUMBER:	**3527**	**INSTALLATION DIAGRAM:**	**4915137**
PRIME POWER:	**425 HP (317 kW) at 1500 r/min**	**DATE:**	**2006/9/22**
STANDBY POWER:	**470 HP (351 kW) at 1500 r/min**	**EMISSION LEVEL:**	

GENERAL ENGINE DATA

Type	4-Cycle;In-line;6-Cylinder	
Aspiration	Turbocharged,Aftercooled	
Bore x Stroke - in.×in. (mm×mm)	5.5 ×6	(140 × 152)
Displacement - in.^{3}(L)	855	(14)
Compression Ratio	14.0:1	
Firing Order	1-5-3-6-2-4	
Dry Weight		
--Fan to Flywheel Engine - lb. (kg)	2870	(1300)
--Heat Exchanger Cooled Engine - lb. (kg)	3095	(1410)
Wet Weight		
--Fan to Flywheel Engine - lb. (kg)	2970	(1350)
--Heat Exchanger Cooled Engine - lb. (kg)	3320	(1510)
Moment of Inertia of Rotating Components - With FW1109 flywheel - lb.·ft.^{2} (kg·m^2)	118.5	(4.99)
Center of Gravity from Rear Face of Flywheel Housing - in.(mm)	27.7	(704)
Center of Gravity Above Crankshaft Centerline - in.(mm)	5.5	(140)

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block - lb.·ft. (N·m)	1000	(1356)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - in.Hg (kPa)	3.0	(10)
Standard Exhaust Pipe Diameter - in. (mm)	5.0	(127)

AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction		
--With Clean Filter Element - in. H_2O (kPa)	15	(3.74)
--With Dirty Filter Element - in. H_2O (kPa)	25	(6.22)
Minimum Dirt Holding Capacity - g/CFM (g/L/s)	25	(53)
Maximum Allowable Intake Air Temperature ΔT - °F (°C)	30	(17)

COOLING SYSTEM

Coolant Capacity - Engine Only - U.S. gal (L)	5.5	(20.8)
- With Radiator - U.S. gal (L)	16.0	(60.6)
- With Heat Exchanger - U.S. gal (L)	13.0	(49.2)
Maximum Coolant Friction Head External to Engine - PSI (kPa)	6	(41)
Maximum Static Head of Coolant (exclusive of Pressure Cap) - PSI (kPa)	40	(276)
Maximum Static Head of Coolant Above Engine Crank Centerline -ft. (m)	46	(14.0)
Standard Thermostat (Modulating) Range - °F (°C)	180 - 202	(82 - 94)
Minimum Allowable Pressure Cap -PSI (kPa)	7.0	(48.2)
Maximum Coolant Temperature - °F (°C)	205	(96)
Maximum Top Tank Temperature - °F (°C)	212	(100)
Minimum Top Tank Temperature - °F (°C)	160	(71)
Maximum Allowable Top Tank Temperature for Standby / Prime Power - °F (°C)	220 / 212	(104 / 100)
Minimum Recommended Top Tank Temperature - °F (°C)	160	(71)
Minimum Coolant Expansion Space - % of System Capacity	5	
Minimum Coolant Makeup Capacity - U.S. gal (L)	1.1	(4.2)
Maximum Raw Water Pressure at Engine Outlet -PSI (kPa)	15	(103)
Maximum Inlet Restriction at Raw Water Pump - in.Hg (kPa)	10	(34)

Maximum Raw Water Pump Initial Suction Lift- ft. (m).....	3.05	(10)
Minimum Raw Water Pipe Size - in. (mm).....	2	(51)
Allowable Pressure Drop Across Keel Cooler -PSI (kPa).....	4	(28)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed - PSI (kPa).....	15 Min	(103) Min
@ Governed Speed - PSI (kPa).....	35-50	(241 - 345)
Maximum Allowable Oil Temperature - °F (°C).....	250	(121)
Oil Pan Capacity - Low / High - U.S. gal. (L).....	7.5 / 9.5	(28.4 / 36.0)
Total System Capacity - U.S. gal. (L).....	10.2	(38.6)
Angularity of Oil Pan - Front Down/Front Up/Side to Side.....	38°/38°/38°	

FUEL SYSTEM

Type Injection System.....	Direct Injection Cummins PT	
Maximum Allowable Restriction to Fuel Pump		
-- With Clean Fuel Filter - in.Hg (kPa).....	4.0	(13.5)
-- With Dirty Fuel Filter - in.Hg (kPa).....	8.0	(27.1)
Maximum Allowable Head on Injector Return Line		
-- With Check Valve - in.Hg (kPa).....	6.5	(22.0)
-- Without Check Valve - in.Hg (kPa).....	2.5	(8.5)
Minimum Fuel Supply Line Size - in. (mm).....	0.625	(16)
Minimum Fuel Return Line Size - in. (mm).....	0.5	(13)
Maximum Fuel Pump Supply - U.S.gal/h (L).....	87	(329)
Fuel Rail Pressure - PSI (kPa).....	182	(1254)
Maximum Fuel Temperature °F (°C).....	160	(71)

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity (24V)		
-- Cold Soak (No Load) - CCA.....	900	
- Minimum Reserved Capacity - CCA.....	320	
-- Cold Soak (With Load) - CCA.....	900	
- Minimum Reserved Capacity - CCA.....	320	
Maximum Allowable Resistance of Cranking Circuit - ohm.....	0.002	
Standard Cranking Motor (Heavy Duty , Positive Engagement） - volt	24	
Standard Battery Charging System , Negative Ground - ampere.....	35	

PERFORMANCE DATA

Idle Speed - r/min	575 - 650	
Maximum No-Load Governed Speed - r/min	1800	
Maximum over Speed Capability - r/min	2700	
Minimum Crankshaft Rotation for unaided Cold Start - r/min.....	150	
Minimum Torque for unaided Cold Start - lb.·ft. (N·m).....	375	(509)
Exhaust Sound Pressure at 1m from Exhaust Outlet -1500r/min -dBA.....	N/A	

All data is based on :

--Engine Operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer, fan, and optional driven components.

--Engine operating with fuel corresponding to grade No.2-D per **ASTM D975**.

--**ISO 3046**, Part1, Standard Reference Conditions of : Barometric Pressure:100kPa(29.5in.Hg); Air Temperature: 25°C (77°F) ; Relative Humidity: 30% .

--This Data Sheet includes both air-cooled (Fan/Radiator) & raw water cooled (Heatexchanger/Raw Water Pump) type engine.

	Prime Power		Standby Power	
	50Hz		50Hz	
Governed Engine Speed - r/min	1500		1500	
Gross Engine Power Output - HP (kW)	425	(317)	470	(351)
Torque lb.·ft. (N·m)	1488	(2018)	1648	(2235)
Brake Mean Effective Pressure - PSI (kPa)	262	(1811)	291	(2006)
Piston Speed - ft./min (m/s)	1500	(7.62)	1500	(7.62)
Friction Horsepower - HP (kW)	30	(22)	30	(22)
Intake Air Flow - CFM (L/s)	865	(408)	920	(434)
Engine Water Flow - GPM (L/min.)	79	(5)	79	(5)
Raw Water Flow - GPM (L/s)	54	(3.4)	54	(3.4)
Fuel Consumption - U.S.gal/h (L/h)	19.9	(75)	22.0	(83)
Oil Flow - GPM (L/s)	35	(2.2)	35	(2.2)
Exhaust Gas Temperature (After Turbine) - °F (°C)	975	(524)	1005	(541)
Exhaust Gas Flow (After Turbine) - CFM (L/s)	2390	(1128)	2595	(1225)
Air to Fuel Ratio	25.8 : 1		24.8 : 1	
Heat Radiation - BTU (kW)	2260	(40)	2500	(44)
Heat Rejection to Coolant - BTU (kW)	13530	(238)	14980	(263)
Heat Rejection to Ambient - BTU (kW)	11280	(198)	12490	(219)

Engine Model: NTA855-G4
Data Sheet: C-0810A
Date: 2006/9/22